Desfocado

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INTRODUCTION

My interest for art comes from the watercolor and from architecture. I grew up in a place where color, glazes, water, light, nature and space were essential elements of life. I develop this personal interest about art away from a conceptual discourse until I started to study fine arts in Bogotá in 2007. When I started my college studies, I distanced myself from those early interests, where I felt safe and comfortable. I walked away from watercolors and the intensity of nature to delve into readings and into artistic practices. I understood that my activity had to stretch out to other practices, to other materials and this should be accompanied by a theoretical support, literary sources and personal research of intimate character.

From my initial interest in nature and watercolor emerged my obsession to “unveil” the materials, my obsession to find the transparency in any surface: wood, fabrics, nets, metal, paper, wax, cement (see Image 1: *Trampa Blanda*, undergraduate thesis). When I was painting the landscape in my childhood I had a certain difficulty to distinguish the planes in the landscape, as my eyes were unable to differentiate them. The imaginary lines that normally divide the planes blurred. I never got to depict nature in a realistic way; I always deviated that representation.

Image 1: *Trampa Blanda,* undergraduate thesis

At my seventh year old I had to walk around for an hour after school time with an eye patch on my right eye. The Ophthalmologists agreed on saying that my left eye was “lazy”, and prescribed to put it to work. For me it was a whole sacrifice. After several years, my eye only continued getting worse. In the course of covering the eye, I remember how the movements became a memory mirroring and when de scene was unknown I became clumsy. The exercises and the reviews continued as long as my endurance to follow these medical routines. The stories around my eyes became inherent to my life: one day I even thought that my contact lens had adhered to my left eye. I thought that the lens had been absorbed by the eye and that since that moment I had a healthy eye and a 20/20 vision. My parents spent several days looking for the lens in my eye. My mother had idea of manipulating the eye with a spoon since she thought, in a delirium, that turning around the eye the lens could appear.

With the purpose of revealing materials, I perforate them, deteriorate them, and rip them, always in search of a certain transparency. Nevertheless, it is a veiled transparency: it is a transparency that reveals something but not its entirety. I find myself in the search of a secret. I usually accumulate materials to generate a layer one after another one; it is an insatiable search after something that never strips completely.

Through this search I reached glass[1], a material that commonly is accepted as transparent. Nevertheless, after having an introduction to the material and after having the possibility of working with it, I understood that its transparency was an apparent translucency. Glass, before being glass, is sand and when exposed to high temperatures (1180 C) it becomes a kind of orange untouchable lava. Glass can be opaque, colored, fibrous or powdery. Investigating this material, I discovered a universe of opacities inside the transparency that characterized it. I found a diversity of layers concentrated in a single one that allowed multiple artistic possibilities.

Another point of this work that directly linked to glass, with the idea of the transparencies and with the action of observing through them was the work with the optical lens: this one as a mediator between the observed object and the eyes. I wanted to start from the principles of the lens, of its function in the optics to later try to deconstruct that initial function and explore the capacity of glass to distort, magnify, diminish or dispel images randomly. I was interested in the different plastic deformations that through experimentation were expressed in the transparency of the material. The lens appeared, in my process, as prosthesis of the eye that lacked functionality and allowed me to propose a look that went out of the ordinary and the literal.

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[1] I had an introduction to glass working in Bogotá with Maestro Mario Maldonado before starting the *Master of Glass, Art and Science* (Program between *Universidade de Lisboa* and *Universidade Nova de Lisboa,* Vicarte Reaserch-Unit, Glass and Ceramic for the Arts, Lisbon-Portugal).

Besides working with the lenses, I simultaneously started to explore the transparent parts of the human eye, as well as the colorless liquids it contains. The more superficial layers of the eye: the cornea is the ocular surface[2] that because of its transparent character is assimilated to glass. Likewise, the relationship between lens and eye is direct: to achieve a proper vision when the eye is faulty we need a lens.

In this thesis I searched for the alterations provoked by the act of looking awakening other possibilities in the ways of seeing. In the process of disassembling the lens, based on the glass works, I tried to make something cloudy with the vision, something uncontrollable. I looked for a vision that ranged between seeing and not seeing. I tried to metaphorically unify the eyes with the objects in that moment of interaction between materials and spectator. I looked for a blindness that lasted for seconds, a blindness that tried to reach silence in the observer through a total un-transparent object. I walked in the search of a "partial" blindness[3].

[2] The eye diagram can be consulted in the publication: *Optics and Optical Instruments* B.K. Jhonson Chapter III: The eye page. 37. "At the front of the eye is a more steeply curved spherical transparent layer, called the cornea. (…) The space immediately behind the cornea is filled with a fluid, the aqueous humour (…)."

[3] *De Siete noches*, noche séptima: *La Ceguera* – Between june and august 1977, Jorge Luis Borges gave seven lectures in the Teatro Coliseo de Buenos Aires: La Divina Comedia, La pesadilla, El libro de las mil y una noches, El budismo, ¿Qué es la poesía?, La cábala, y La ceguera, más tarde recogidas en su libro Siete Noches."

BACKGROUND

When I started to work with glass, the way I approached the materials transformed itself. The need to rip and perforate the material disappeared. In my previous works I removed layers to the material as a way to leave unprotected. In this new stage the work process reversed itself. I turned opaque a transparent material without losing completely the passage of light. At this time I met some textures that started to break the transparency. At the beginning of each experiment I had the purpose and the idea of a result that always finished deviating due to the material difficulty and the nature of the experimental work. This brought me to use different techniques[4] and glasses such as float glass (window glass), soda lime glass (row material to glass melting), sand-casting (sand molds melting process). The results were unsuccessful but these experiences allowed me to find processes that enriched my work (see Image 2: the result of thermo-shock in pieces of molten glass). Along the process, the experiments led me to find results that were not completely predictable. On the contrary, these unexpected results let us find new solutions with the material.

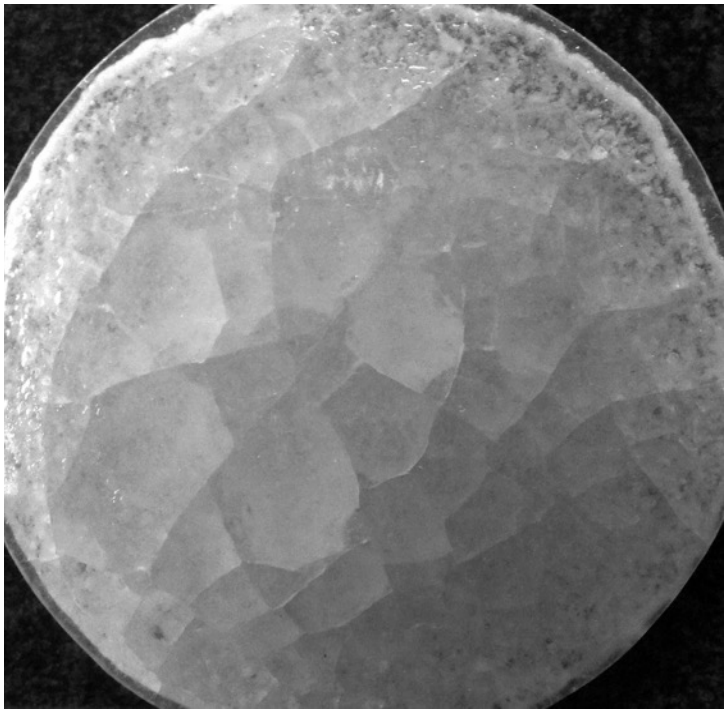

Image 2: The result of thermo-shock casting glass

[4] The techniques used were *blown glass* with and without pigments, *pâte de verre*, *casting*, *sand casting*, *polishment*, *ceramics* and experimentation with different glues (Araldite 2020 Epotek 301 Hxtal NYL-1, silicone) and with different waters (tap water, distilled water, chlorinated water, Millipore).

This work could dwell over a conceptual contradiction; I got interested in producing objet/lenses that mediated vision without allowing to see entirely. These objects/lenses I made assumed a sense of vision that did not pretend to be addressed toward a specific point. On the contrary, the purpose was to address the look through something that somehow modified what usually is observed. Although through the process I guided myself by anatomic descriptions of the eye and medical correction of the optical diseases, the work did not follow a medical practice.

The scientific learning acquired in this Master[5] influenced my way of acting in workshops and the logic during the development of this thesis work. Through its implementation, in practical terms, the scientific method as a tenet helped me to organize and make sense of experiments developed. In a first instance I questioned myself regarding the material. Then I built a hypothesis to put in practice the experimentation with the material. Finally the result got me to a conclusion that allowed me to proceed to a second experiment introducing a new variation. Nevertheless it was impossible to follow this method to the letter since many times I quit on the way due to unwanted results. This process though, led me to another experiment. Likewise, as I previously said, the function of the eye and also some malfunctions of it led part of the workshop I pursued.

The lens and the eyes were then essential for the development of the work made. Studying the eye I got interested on its transparent parts. These parts were: the cornea (fibrous, transparent and aqueous layer) the vitreous humor (colorless liquid), the aqueous humor (transparent liquid that oxygenates and nourishes cornea and crystalline) and the crystalline (biconvex structure, constituted by several transparent layers of protean elastic fibers)[6].

These transparent parts on one side protect the interior of the eye and on the other side allow the pass of light to the retina (see Image 3: Horizontal section of the human right eye). The crystalline works as a lens inside the eye. It is in charge of filtering the images so these are projected properly on the retina. It moves in the eye to properly focus the light rays on the sensitive retinal cells. Distant or close images go through these transparent parts and are projected on the retina thanks to this eye lens[7]. The eye prostheses –the external lenses- were created through history as an extension of the eyes, being an analogical reconstruction of the crystalline. Thanks to the anatomic knowledge of the

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[5] VICARTE Research unit, FCT / UNL (Monte da Caparica, Almada, Portugal)

[6] These descriptions of the transparent parts of the eye were found *in Introduction to physiological psychology* (Spanish version of Alfredo Mirales War). Chapter 11, pages 358-413, Francis Leukel, editorial Herder, Barcelona, 1978, ISBN rustic 84-254-06080-3

[7] Idem

eye we know about these transparent layers of the eye, although these layers remain invisible for most people. With glass I got interested in exploring this sense of invisibility, meaning to see what cannot be seen on a special device to see. These invisible layers of the eye cannot be seen, although they are present and have a primary function: they let light pass through the entire eyeball. The same thing happens with the waters of the eye (vitreous humor and aqueous humor), passing invisibly and giving a necessary volume to the oval form what characterizes it[8].

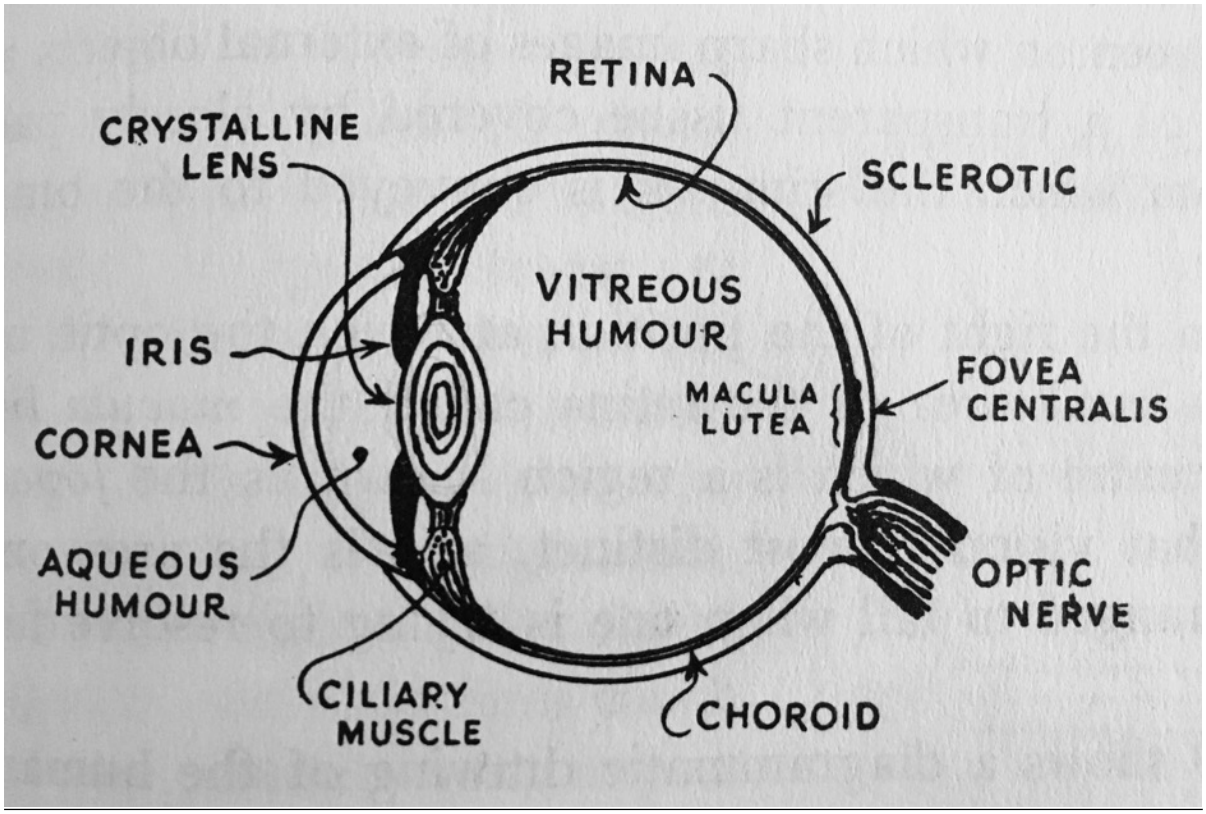

Image 3: Horizontal section of the human right eye[9]

Ocular prostheses such as glasses and lenses are necessary for our vision when the damage or malfunctioning of the eyes are evident, so that carelessly could become acute. I got interested on understanding "the most common pathologies of the emmetropes"[10] which are myopia –short sightedness – and the hipermetropia – far sighted – (see image 4: te case of emmetropia, myopia and astigmatism). Thus, I really approached the eye: it was generated a closer relationship. I could understand the differences between an emmetrope eye that correspond to a "normal" eye, an eye with

[8] idem

[9] *Optics and Optical Instruments* B.K. Jhonson Chapter III: The eye page.37.

[10] Carvalho, Marina Carmina, *A luz na interpretacao visual da obra da arte*, PHD IN Fine Arts, Expertise in Sciences of the Arts, 2012. Thesis directed by the Professor Doutor Fernando António Baptista Pereira.

the capacity to accommodate an image in the retina and on the other hand the ametrope eye fails to accommodate what it sees in the retina due to its form or a certain deformation in the cornea[11].

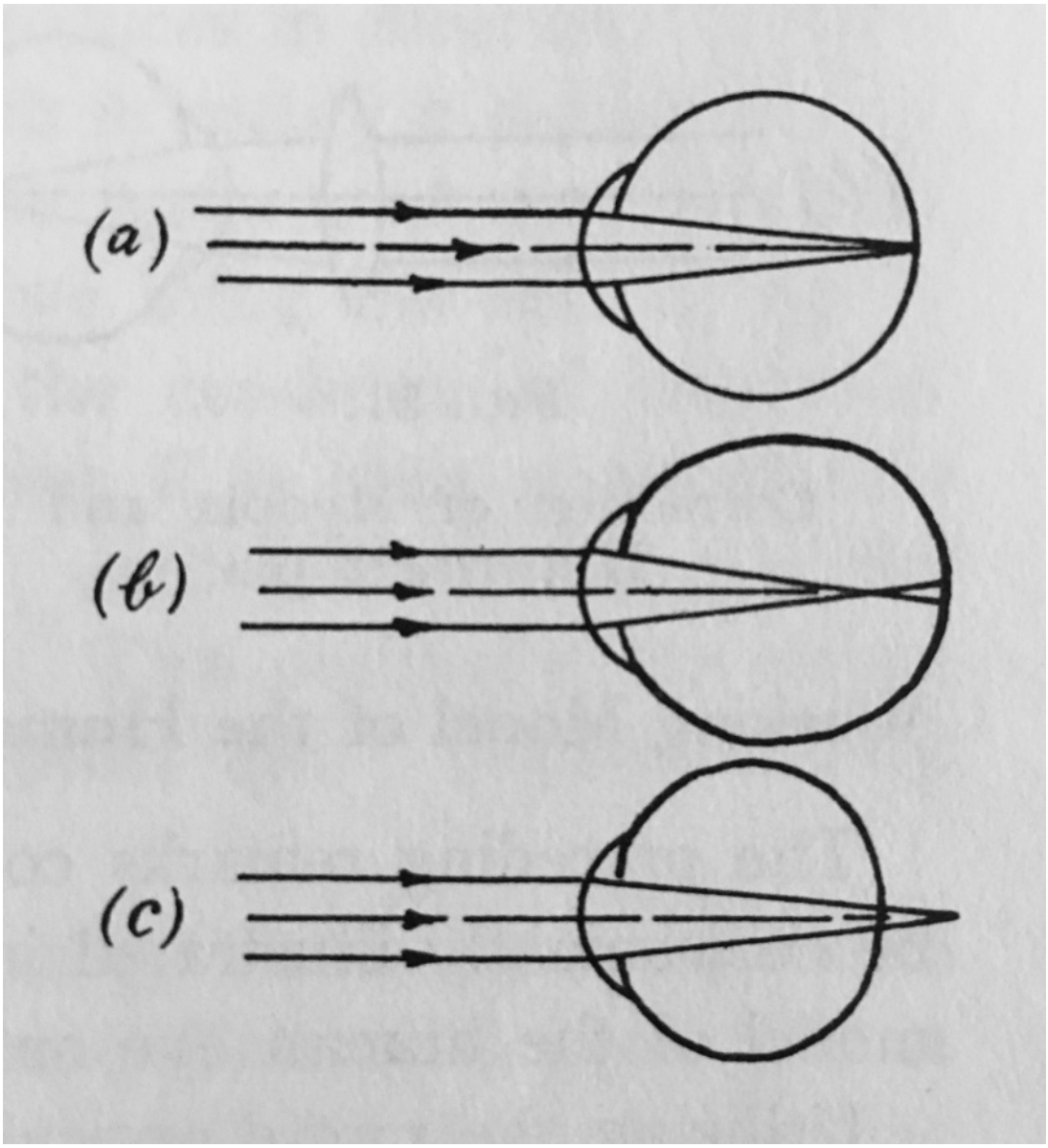

Image 4: Emmetropia (a) and ametropias: myopia (b) and hypermetropia (c)[12]

[11] The explanation of "Emmetropia and Ametropia" can be consulted in the publicaction: *Optics and Optical Instruments* B.K. Jhonson Chapter III: The eye pages. 38/39. "When the optical system and the axial length of the eye are such that Light from an infinitly distant object i focused exactly on to the retina when accomodation is completed relaxed, the eye is said to be emmetropic, and the condition of that is emmetropia. When this is not the case the eye is said to be ametropic, and the three types of ametropia are miopía, hipermetropia, and astigmatism."

[12] *Optics and Optical Instruments* B.K. Jhonson Chapter III: The eye page. 39.

Nevertheless, my goal eventually diverted from the functional optics. I traveled through these diseases, I became interested in understanding them, but my objective was not to generate corrective lenses and/or functional lenses. Understanding only the general objective of the traditional optics, basically to correct vision so that it is a normal way, I intended to deconstruct the functional lens. I started then from the lenses principles, their mechanisms and tasks to dismantle them and then stimulate other ways to see through archaic lenses[13]. These other lenses allowed you to see and at the same time not to see. I will later describe the experimentation process I had to make this job.

Through the production process I often thought about the idea of sudden blindness or uncertain blindness, the moment located between seeing and not seeing. I thought of the imaginary instance that coincides with doubt. The result of this action was an intense flicker of the lid and an itching that one rubs with its hands in a repeated way to clarify the observed; rural and urban landscapes, interior scenes, people and objects were blurred. This imaginary instance carried on and I though of the sudden moment when vision became an endless blank sheet[14]: the mirror no more reflected, the conjunctivas blocked the lachrymal glands: the vision was lost. Attached to the thought of blindness I repeatedly asked myself how could blind people run their life? The answer corresponded to a sequence of nonsensical thoughts, because the reality is that I see. I see with a handicapped vision but I see. However, I find myself believing that blind people are lucky for not belonging the general crowd. They are endowed with an attribute that we the seers do not have. They have the virtue of seeing the world differently: they sense the world.

From these thoughts came out the purpose of willing to alter the other senses: that everything could sound louder, that everything smelled more, that everything felt more thanks to the absence or alteration of sight. My work steered towards this direction, and is still nourished from my childhood experience when I used to walk with a patch over one eye, seeing halfway, stumbling.

My artwork starts from this point.

I discovered a device that altered the vision, as a kind of kaleidoscope. This device was made by blowing glass bubbles, then submerged in water and quickly withdrawn, after that reheated to avoid its explosion by thermal shock. It was in this first exercise with glass that I found an optical effect that

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[13] *Archaic lenses* because the production was not in a sophisticated laboratory of lenses. In my lenses/objects we could find many imperfections as dirt and bubbles.

[14] The term *white vision* comes from *Blindness* by Jose Saramago. However I am not referring to the book. I care to think about that idea of *white vision* outside the context of the book. However it was a reading that accompanied me throughout the artistic work.

interested me, since besides getting a kinetic effect; they also worked as dysfunctional lenses. From here were triggered several exercises with the material. It was a starting point (see Image 5: Blown bubbles and mesh).

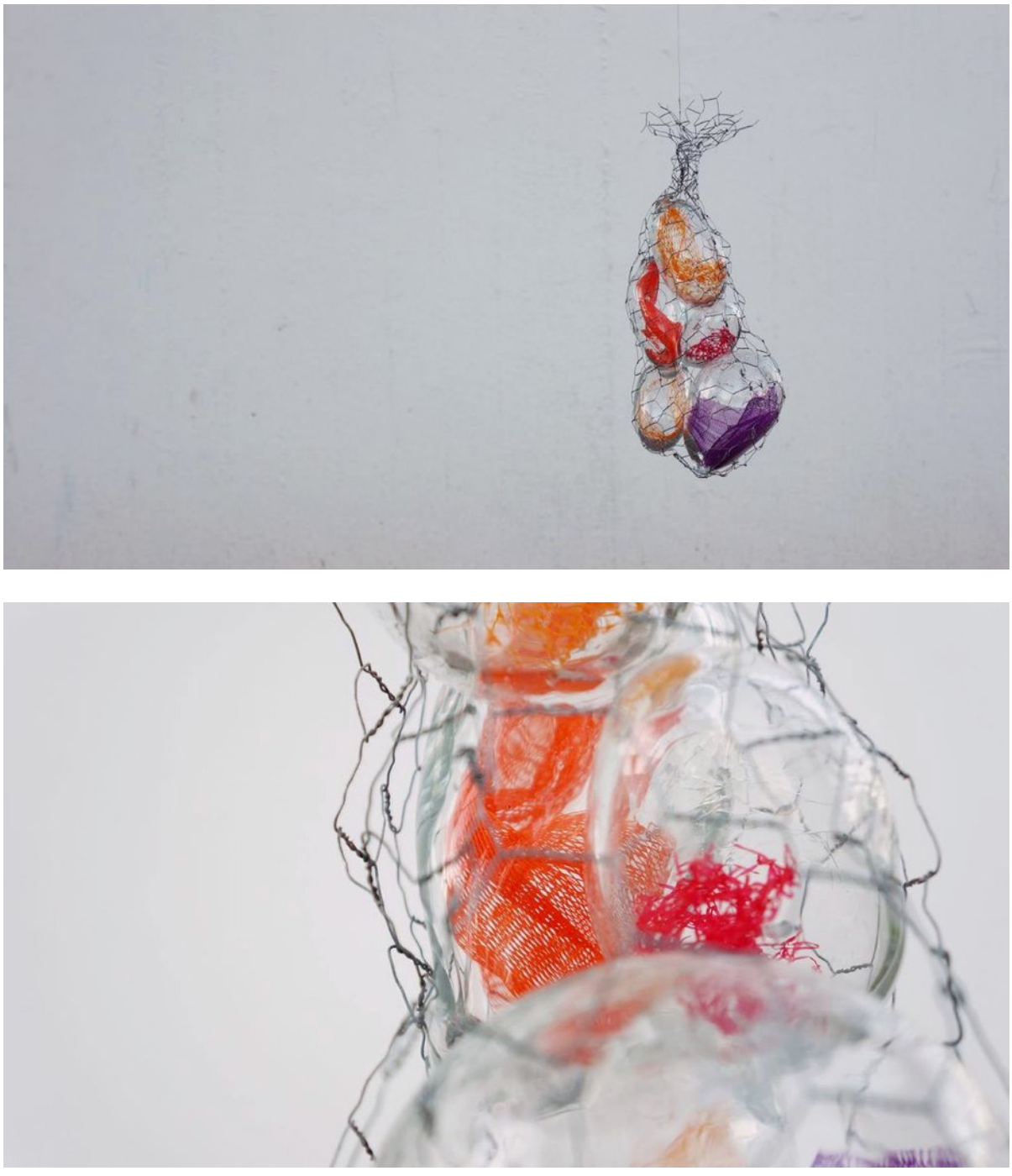


Image 5: Blown bubbles and mesh

In a second instance I made a series of lenses, as glasses, with blown polished glass and bases of metal bent rods to support them. They resemble eyeglasses frames with a museum character (see Image 6: Detail work *Óculos*). These lenses were the first sculptural approach that I had in which was purposely made to distract the eye of whom observed: the simple action of leaning towards the object declared a pause in the habitual act of looking. In this pause, emerged something invisible, interrupting the casual look of the observer and allowing a moment of absorption in the spectator. As installation, these eye glasses (*Óculos*) were placed in a base hanging from the ceiling, requesting a slight tilting movement from whom wanted to look through them. The distortion produced by the lens added up to the movement of the body to see, creating a double act of body and visual awareness. (see Image 7: Spectator documentation in *Óculos* installation).

Image 6: Detail work *Óculos*

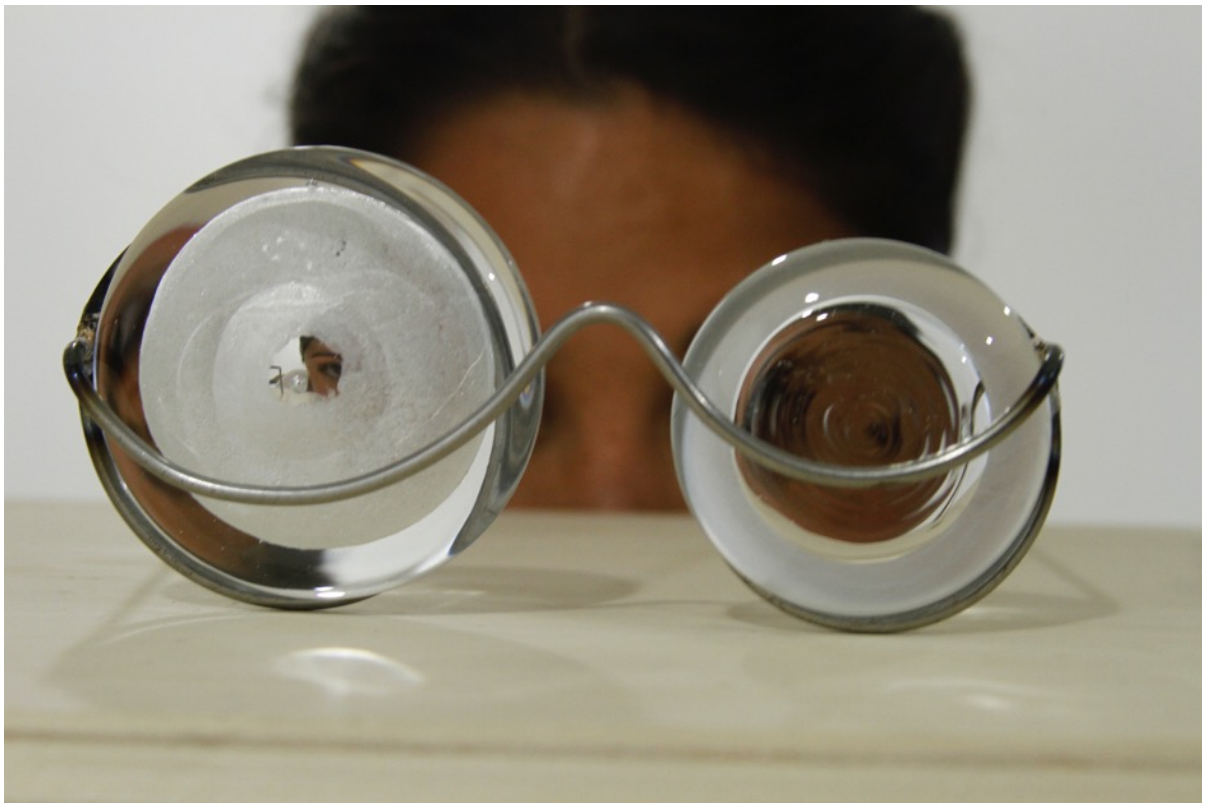


Image 7: Spectator interaction with *Óculos´* installation

Following the old process for the manufacture of magnifiers, I made some glass semi-spheres. This old process involved cutting glass spheres by half and after polish the flat side until getting an optical effect of magnification. Glass Magnifiers were the first kind of lenses available to read more easily or to correct the presbyopia[15]. After making some glass semi-spheres, I engraved a few words on the flat side onto seven of these half spheres: blindness – is – not – white – or – black – you – see. The words were difficult to read since the letters were backwards, only one word could be read clearly: you. (see Image 8: *Typographic case* documentation). These magnifiers were exhibited in a letter-less antique typographic box.

[15] *Spectacles of spectacles,* Spectacles over seven hundred years by G.LE. Turner. History of science and technology group. Imperial College of Science and Technology, London. (pages 10 to 14)"The first type of lens was convex".

Image 8: Typographic case documentation: half glass spheres

Later I put together a reading device with movement made up of solid glass pipes attached by rubber. This device could travel turning around in a history text of optics. Nevertheless, the text turned into a distorted image every time a viewer rotated the device over the text. (see Image 9: Documentation of *Reading Mechanism*).

Image 9: Reading Mechanism Documentation

The works previously described were exercises that helped me to undertake the direction of this thesis work. In a first instance I questioned traditional optics, regarding the fact of seeing or not seeing or the transit stage between these two. To think about a pair of eye glasses as non-functional is already to make a question doubting about the established and of the stereotyped, which helps to doubt about that which appears as immutable.

In this previously described processes were found results that later I could use in the thesis project: from the *Óculos* I rescued the idea of producing my own lenses to alter the vision, and at the same time I rescued the processes to polish and attach these glasses to a metallic structure. Likewise, the *Óculos* project let me glimpse some sense in the corporal relationship between the spectator and the installation. From the project of half spheres in the typographic case I seized the magnifier effect to enlarge what we observe. From the reading device I took the idea that the spectator may interact with the object to activate it.

Throughout the lengths of this chapter followed a series of art works that had as a goal an exhibition at Library *Faculdade de Ciência e Tecnologia* / *Universidade Nova de Lisboa*. Those were exercises that led to an extension of artistic possibilities that I continued exploring and also transforming.

EXPERIMENTAL PROCESS

This chapter is a transition between the first exhibition and the final exhibition of this Master, a transition in which I took decisions and built a working process to conclude this thesis. I will talk about the experimentation I had, about the materials used and about the findings appeared through the process. Likewise, I will describe and explain the choices made along the process to establish discarded and selected pieces.

To get to the execution of the final sculptures I went through working with different mediums: drawing, printmaking, ceramic and metal. The work with glass establishes parallelisms with the work with other materials. In this way, the processes of casting, engraving, cutting, polishing, molding or finishing used in glassmaking are familiar to other sculptural techniques. In terms of the tools used along the process, the work in glass coexists with other materials like graphite, steel, wood, wax, plaster or silica. This coexistence of glass with other materials and processes opens a vast world of possibilities and combinations in between. Something important in this exchange of materials and tools is the possibility of reaching a result in x material through a process made in other material. (see Image 10 (Figures): Processes in wax, ceramics and glass).

These working layers of processes in different materials and the combination of different means allowed me to produce a series of lenses, allowing me to release the absolute control on their configuration. On the contrary these lenses were the result of the concatenation of a series of plastic processes. Following my first ideas, along this process some blind points appeared in the pieces. Something unimagined appeared in the intended results, although it wasn't planned completely.

I will show ahead the exercises in which I worked to get to the final exhibition of this Master[16], giving a conclusion to an experimentation process of two years.

First I worked with molds of plaster and silica. With them, I stumbled upon several errors like the blast of a mold in the furnace during its smelting (see Image 11: exploited plaster and silica mold). In this specific case there were several factors that made this to happen. It was a big mold that did not have fiberglass to stabilize its structure. The distribution of the mixture was not homogonous around what

[16] *Master in Glass Art and Science*. VICARTE Research unit, Faculdade de Ciências e Tecnologia. Universidade Nova de Lisboa e Universidade de Lisboa facultade de Bellas Artes.

was going to melt. Maybe failed the programming of the furnace. Being this the first time I faced glass melting, these events arose frequently, which I enjoyed since for me they became in possibilities for the production of the pieces. From one of these exploited molds came out one of the pieces that finally I exhibited as a lens. The explosion in the mold copied a greater percentage of opacity and a singular texture to the piece.

Image 11: Exploited plaster and silica mold

In another molding process, I started to use lost wax and wax molding. Through the wax I could give form to different prototypes of lenses, regarding the volume I had imagined. Another experience that was important in this process was to “mirroring”[17], to produce a mirror of concave surfaces. Likewise, every one of these processes was made in parallel to a drawing process in which the experiments were imagined. The process of polishing generated long hours to finish the pieces and was present in all the pieces that were finally showed. There were several examples that accounted for the complexity of the material to get an imagined result. For example, when “mirroring” concavities not

[17] A chemical solution was prepared for testing mirror copper and silver. Finally, I used silver solution to mirror small glass objects.

properly washed as needed to eliminate any residue with the corresponding chemical elements[18], the solution did not adhere to the glass or stained.

After several attempts to cast in molds lenses with the desired transparency, I decided to look for alternatives. One of them was to work with concave / convex glasses and assemble them up to produce a convex-convex or flat-convex lens. (see Image 12: Schemes of lenses for production). With the available glass I had, it was difficult to get a homogeneous transparency. The effect of distorting or altering the vision of the spectator through the object never appeared through the casting process. Although, casting glass got me interesting results of lenses that became more like objects to observe then objects to look through. They were objects that I made with different techniques like sand casting (glass melting in sand molding), *pâte de verre* (glass granules foundry) and foundry in plaster and silica molds.

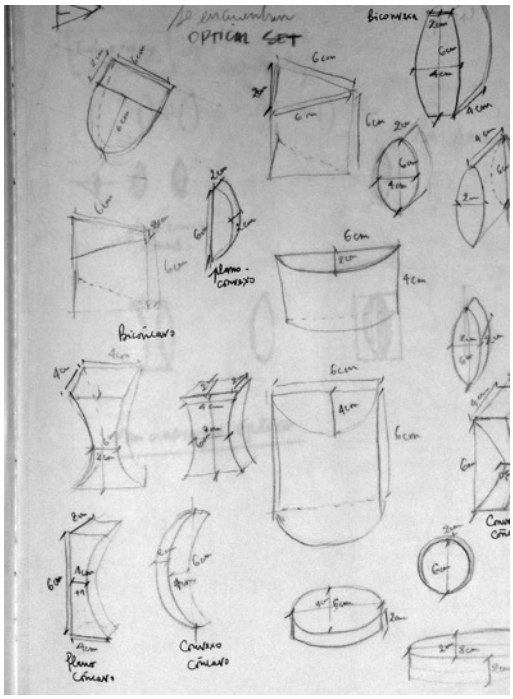


Image 12: Schemes of lenses for production

[18] HNO3, distilled water (H2O), KOH, distilled water (H2O)

I used, spherical glasses to cover laboratory clocks[19], which became an essential discovery to achieve lenses and effects with total transparency. I attached two of these 27 centimeters diameter glasses with Araldite[20], glue for glass, and then I filled the cavity between them with water. In this experiment, the water worked as a powerful magnifying glass that could focus and blur in a random manner, as well as generate light effects. With this operation, I got my first double-convex lens, which I assimilated to the crystalline of the eye. The yellowing coloration of the Araldite, forced me to explore different kinds of glues until finding a solution invisible to the observer[21]. To make longer the transparency of the water inside the cavity of the glasses and to avoid residues I also worked with different types of water[22].

The relation of the space of the exhibition with the pieces was relevant for me. In this sense, I decided to increase the scale of the elements that I wanted to show and to exhibit the experiment with a selection of elements. Following these ideas, I proposed some sculptures for the final exhibition that did not pretended to direct the gaze towards a specific point but to construct a dynamic of crossing looks.

[19] Vreis laboratorio Lisboa. Avenida Dom Carlos I 35, 1 DER1200-646. Lisboa

[20] Glue Araldite 2014. Ceys. Epoxy.

[21] Glues used: Araldite 2020, Epotek 301, Hxtal NYL-1, Silicona.

[22] Tap water, distilled water, chlorinated water and Millipore.

RESULTS AND DISCUSSION

"And if we were all blind, but if we are all blind", José Saramago

For the final thesis presentation I made an installation at the *Jardim Botânico de Lisboa*[23]. In this space I chose a pond without water that allowed the project to have a lower and open space deeper the rest of the Garden's area. Within this location, the spectators had to descend through a staircase to approach the elements being exposed. I presented five mobile objects, each of them supported with a movable stainless steel structure. Every one of them has a base with four rubber wheels from which comes out a steel pipe holding a glass object. On the top the lenses had two different possibilities to rotate. The "head" of the objet was 1.66 centimeters above the floor level. (see Image 13(Figures): General View of the Installation at the *Jardim Botânico de Lisboa*). Although the structure supporting the objects is the same for all, every glass head is different.

The first structure holds a convex double lens with *millipore* in its interior (water with a distillation elaborated process), the second structure holds a flat convex lens with *millipore* water inside, the third structure holds a glass concave-convex disc made with the technique *pâte de verre*, the fourth structure holds another flat-convex disc made with molten glass, finally the fifth structure holds two double-spheres of borosilicate glass mirrored with silver solution, separated one from the other by a 30 centimeters distance, reminding two eyes (see Images 14, 15, 16, 17 and 18 (Figures): Detail of the Installation *Desfocado* about each one of the final pieces).

The Installation allowed each of these structures to be moved and interacted by visitors of the *Jardim Botânico*. Interactivity made the configuration of the installation to change constantly along the month of the exhibition. On the other hand, the mobility of the pieces allowed the appearance of new relations between the five objects, in addition to the changing visual relations with each interaction. The possibility of the double rotation (up and down and sideways) of the *cabezotes*, meaning the upper part holding the glass elements, made necessary the activation of the pieces by the spectators in order to achieve the optical operation of seeing and not seeing through the lenses. (see Image 19 and 20 (Figures): Details of the Installation of spectators interchanging with the pieces).

[23] Jardim Botanico de Lisboa is connected and is part of the *Museu de Historia Natural y das Ciencias MUNHAC*. http://www.museus.ulisboa.pt/node/440

The *Jardim Botânico de Lisboa* is a space that allows some tranquility away from the city, generating a pause in it. In this space, the sound of the city is cushioned by vegetation and the visual data changes since we are penetrating; we find also a microclimate that stimulates our senses. These characteristics were essential for the choice of this space and for the dialog that can come out of the garden and the pieces I described above. This place has a great importance in this work because it helps to connect the idea of the annulment of vision with the exploration of other senses. In this sense, I placed sculptural objects that do not pretend anything but to be and coexist with its environment. My pieces occupied the place at the time the place filled them back with light and reflections, giving them a new way of being perceived.

These five elements of the thesis have a height that meets the face of the observer as an equal. Four of them cover it fully and another, with two small mirrors, as eyes, that reflex it and expand the environment in a very subtle and confusing way. The body of this piece, with two small spherical mirrors, generates a doubt in the spectator, since from the distance it seems an empty structure. Approaching them, the spectator discovers its face in two small mirrors placed in the sides of a U-form structure. This piece is the manifestation of two mirrored eyes[24] that unlike the other elements, they block the passage of light, reflecting it.

The reflexes, the brightness, the constant mutation of nature, appear in the pieces continuously. They are elements that come alive with the light and the presence of the visitors interacting with them. The natural light is what succeeds to produce the reflexes and optical effects; nevertheless the open context of the *Jardim Botânico* allowed an environment where this light is not controlled (see Image 21 (Figures): Reflection within installation). Some of the objects in glass held by the steel structures retain some transparency and keep veiled thanks to the different techniques used while others directed light through them[25].

[24] For this work I thought about the work of Giuseppe Penone: *Rovesciare I propri occhi* (1970) -Invest own eyes- (Image 22: Image Annex (Figures)). The artist used mirrored lenses that blocked his vision. The mirrored lenses supply the function of the eye. The mirror sees in advance. The mirror is seeing what eye has not seen.

[25] *pâte de verre, casting, millipore* (distilled water).

CONCLUSION

"Before the vastness of the spectrum, we are blind creatures" [26]

As a conclusion, I find relevant to speak in first instance about the work with glass. To work with this material was an experience that helped me to stop obviating it: the windows, the glasses, vases, cups, showcases, containers, the lamps, electric bulbs appeared otherwise. As an artist I had a lack of scientific knowledge to work with glass or any other material. Now I think that this is imperative. To understand the material from its composition helps me to advance the artistic process. However, being the field of art my first interest, my work had an inclination towards workshop experimentation with materials. Along the master studies, the sciences became a support to the workshop experimentation I had. For two years, I had laboratories and scientists around me who supported my work when difficulties aroused. Likewise, the encounter between art and science happened in my process in a natural way, being the optical lenses and the eyes, as visual organs, part of the history of science. In this way, I did not have to force the meeting.

The introduction of this thesis work pointed my childhood as a starting point. Seems that it partially emerged from a series of events. Since I was little I tried to avoid the natural deterioration of my left eye and had a resistance to its correction. It is important to point out that before this work I had not related my own bodily capacity to the issues and processes that I have artistically worked with. Certain manifestations like the lack of focusing, the headache or the loss of balance due to my half blindness on my left eye, are just the perceptions that these final objects, submitted as thesis, produce on other spectators different than me.

Along my thesis I decided to decompose the ordinary gaze that we assumed since we were kids and I expected to rediscover it. I tried that the partial blindness or sudden / uncertain blindness could be a reflex in the work itself. In my opinion, what I got was on one side that the spectator were conscious of his own look through the objects that were made to be seen, but also to be bodily related with them as well, in order to see. Those were objects that to a certain extent stop being lenses and get closer to a blurred vision. In the words of Paul Klee: "the art does not reproduce the visible, it makes it visible."

Finding a transition between seeing and not seeing is a mid-point where I can place my artistic work, arising the question for further exploring. This restlessness ranges in an apparent uncertainty; it is

[26] BRESSAN, Paola, *Los colores de la luna, cómo vemos y porqué*. Barcelona, Editorial Ariel, 2008, p.18.

among points that apparently cannot get closer, seeing and not seeing. The works I discovered along this paper seem to fluctuate between the static and the dynamic, between silence and noise.

To end I would like to include a quote from Jorge Luis Borges, as a blind point to which my work may project:

"(. . .) I have observed that the concrete is preferred over the abstract, therefore I will start referring to my modest personal blindness, modest in first place because it is a total blindness in one eye, and partially blind in the other side, I still can decipher some colors (. . .) the word of the blind person is not the night that people suppose (. . .) the blindness was not a despair (. . .) was the beginning of something new (. . .) the blindness is like a way of life, a life style and must be accepted so". [27]

[27] *De Siete noches*, noche séptima: *La Ceguera* – Between june and august 1977, Jorge Luis Borges gave seven lectures in the Teatro Coliseo de Buenos Aires: La Divina Comedia, La pesadilla, El libro de las mil y una noches, El budismo, ¿Qué es la poesía?, La cábala, y La ceguera, más tarde recogidas en su libro Siete Noches." "(…)he observado que se prefiere lo concreto a lo abstracto, por consiguiente voy a comenzar refiriéndome a mi modesta ceguera personal, modesta en primer término porque es ceguera total de un ojo, ceguera *parcial* del otro, todavía puedo descifrar algunos colores (…) el mundo del ciego no es la noche que la gente supone (…) la ceguera no fue una desesperación (…) fue el principio de algo nuevo (…) la ceguera es como un modo de vida, un estilo de vida y debe aceptarse así".

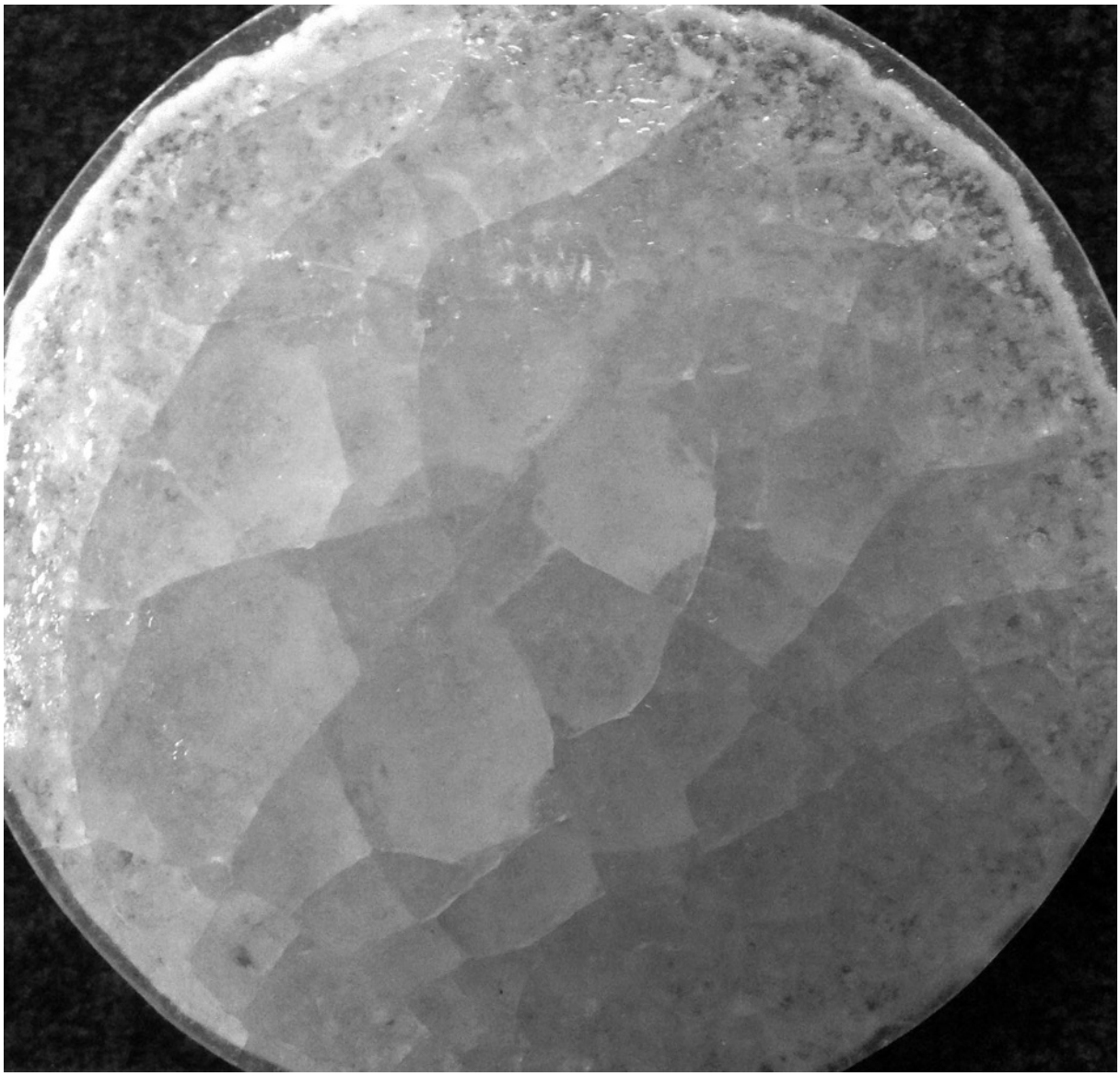
FIGURES

IMAGE 1: *Trampa Blanda,* undergraduate thesis

Trampa Blanda[28],
2 m x 0,3m x 1,5 m
Bogotá-Colombia.
2011

[28] Este trabajo fue expuesto en Galería Warehouse, Bogotá-Colombia en el año 2011. Decido mostrar este trabajo ya que fue en ese momento en que hice conciencia de esa búsqueda por la transparencia y es después de esta exposición que decido aplicar a esta maestría en vidrio (Mater in glass art and Science).

IMAGE 2: The result of thermo-shock in pieces of molten glass



flat-convex object, float glass, soda-lime glass, crystallized resine

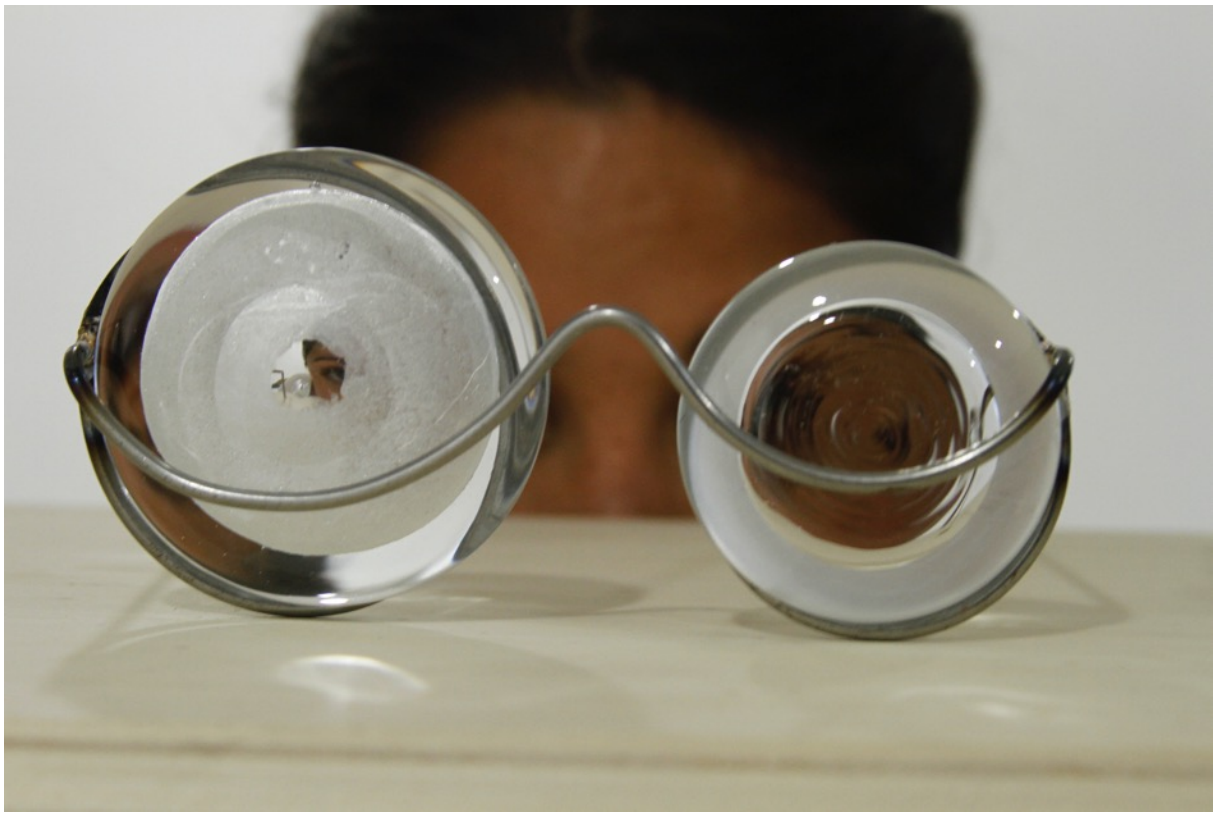
IMAGE 5: *Frutas/Caleidoscopio múltiple*

Blown glass and different meshes
Variable dimensions
Lisboa-Portugal
2013

IMAGE 6: Detail work *Óculos*

Blown glass and metal
Variable dimensions
Lisboa-Portugal
2014

IMAGE 7: Spectator interaction with *Óculos´* installation



Blown glass and metal
Variable dimensions
Lisboa-Portugal
2014

IMAGE 8: Distorted. *Typographic case* documentation

Recycle typographic box, polished glass and engravings
Variable dimensions
Lisboa-Portugal
2014

IMAGE 9: *Distorted. Reading Mechanism* Documentation

Rubber device, borosilicate glass, optic text
Variable dimensions
Lisboa-Portugal
2014

IMAGE 10: Processes in wax, ceramics and glass

Biconvex wax object

Biconvex ceramic object

Biconvex and double-concave ceramic object

Biconvex lens, glass and water

IMAGE 11: Exploited plaster and silica mold

Three plaster and silica molds
(biconvex lens, flat-concave lens and flat-convex lens)
Research Unit Vicarte, *Facultade de ciencias e tecnología*, Monte de Caparica, Portugal

IMAGE 12: Schemes of lenses

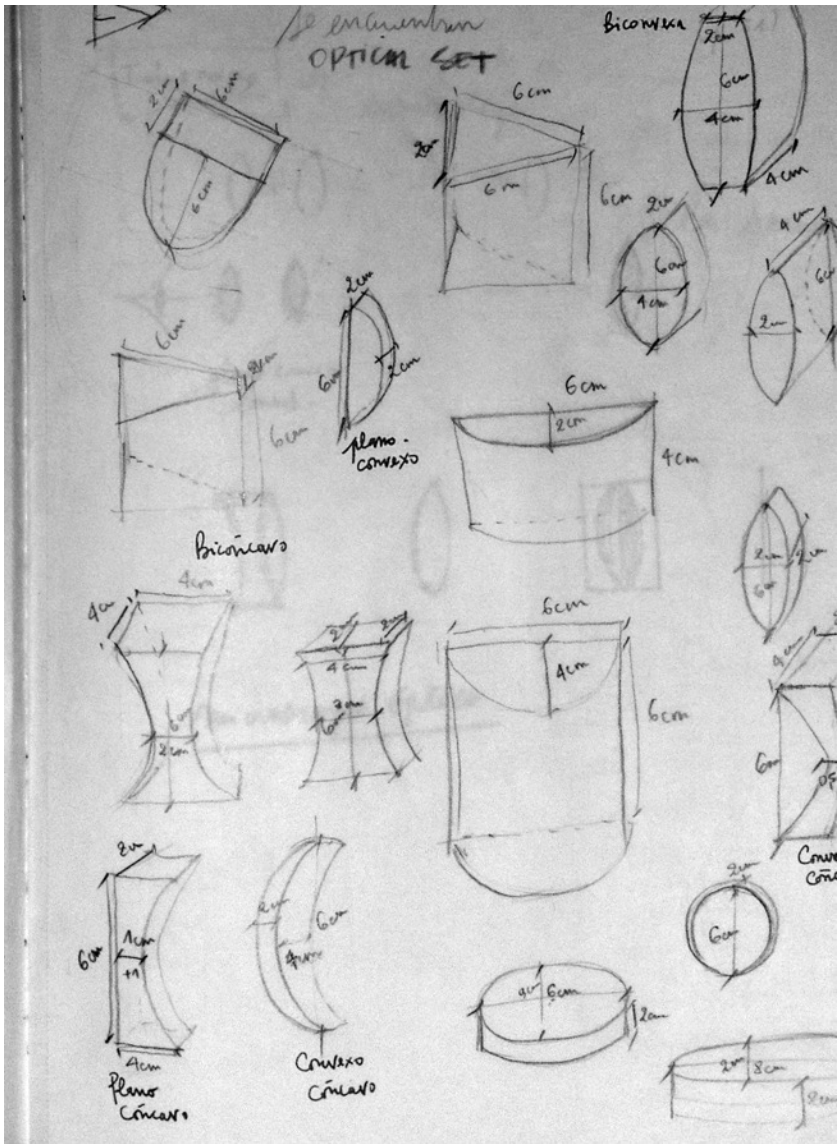
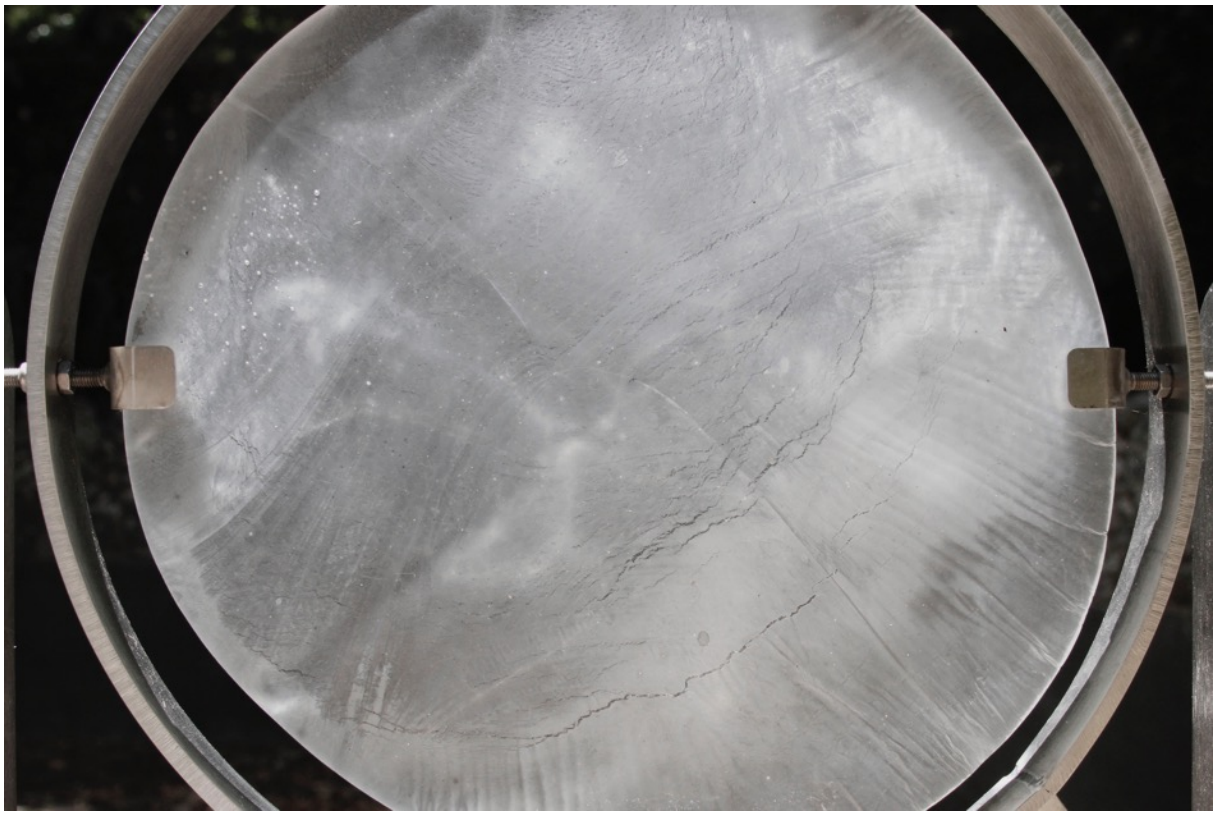


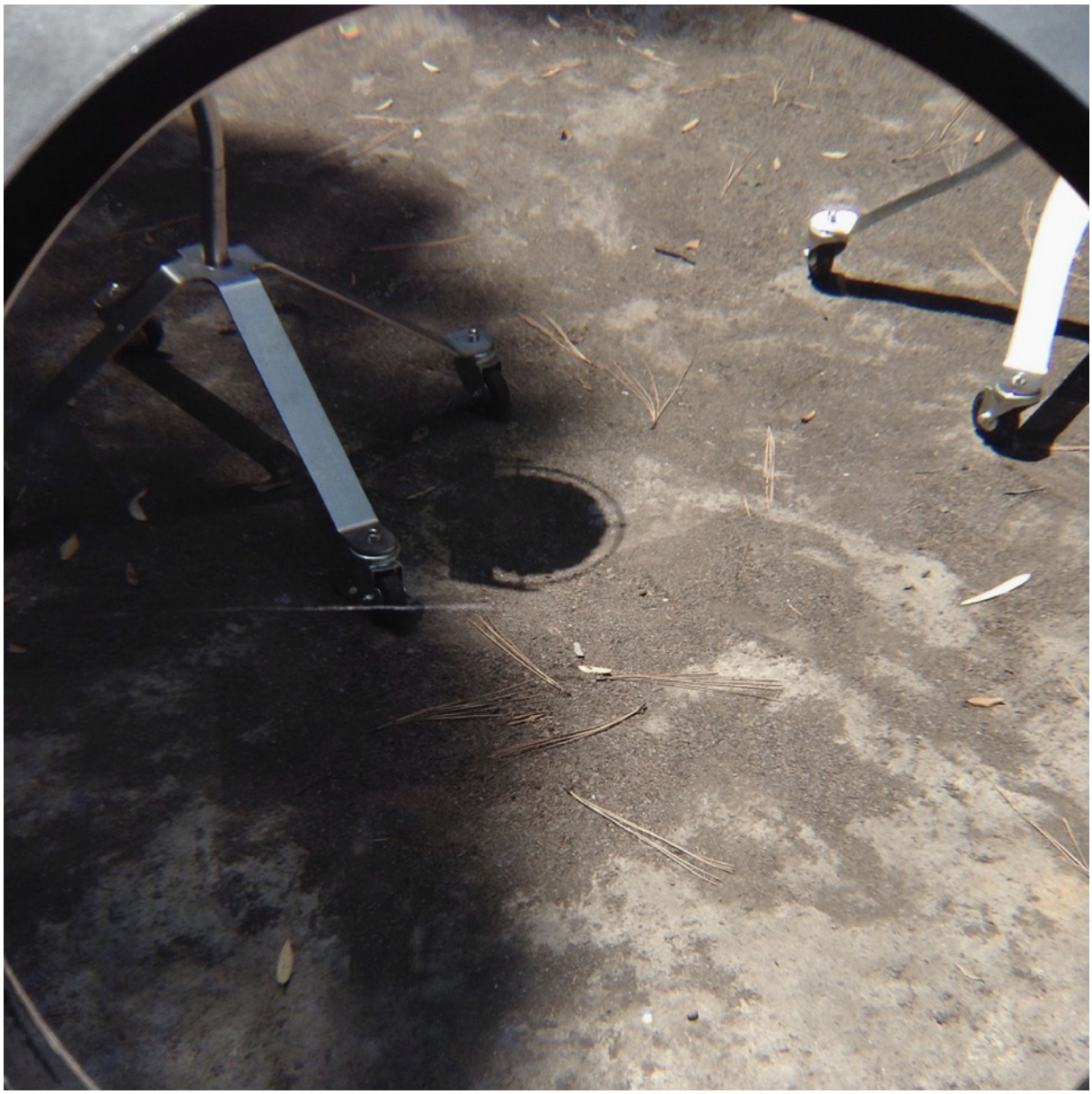
IMAGE 13: General View of the Installation at the Botanical Garden of Lisbon

Desfocado
Installation
Five mobile elements
Variable dimensions
Each piece dimension: 0.80 m x 0.80 m x 1.66 m
Glass, inox, mirror, millipore water
Lisbon
2015

IMAGES 14-18: *Desfocado*



detail: flat-convex object/lens
metal structure, glass casting



detail: object/lens flat-convex
metal structure, glass and millipore water

detail: object/lens biconvex
metal structure, glass and millipore water

detail: flat-concave object/lens
metal structure, pâte de verre

detail: two double spheres
metal structure, blown borosilicate glass with mirror

Images 18-19: Details of spectators interacting with the pieces

Images 20: Reflection within installation

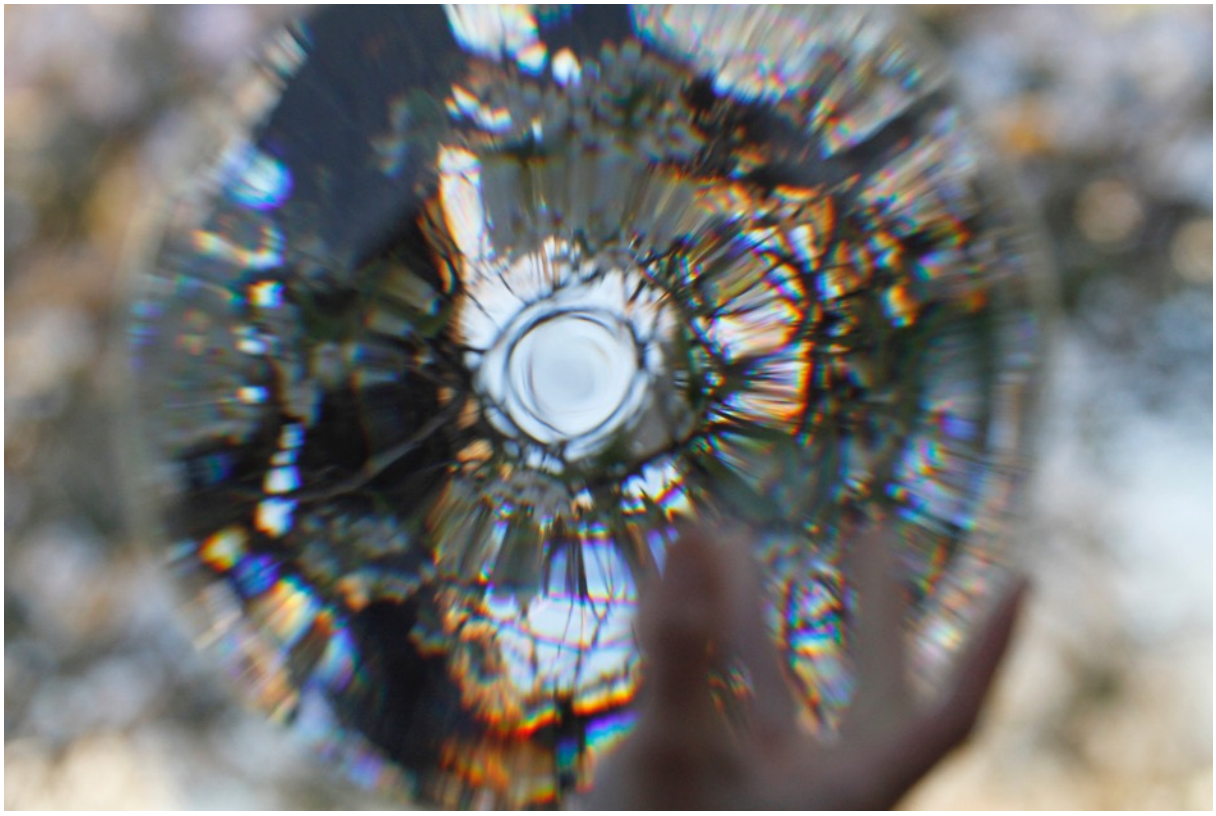
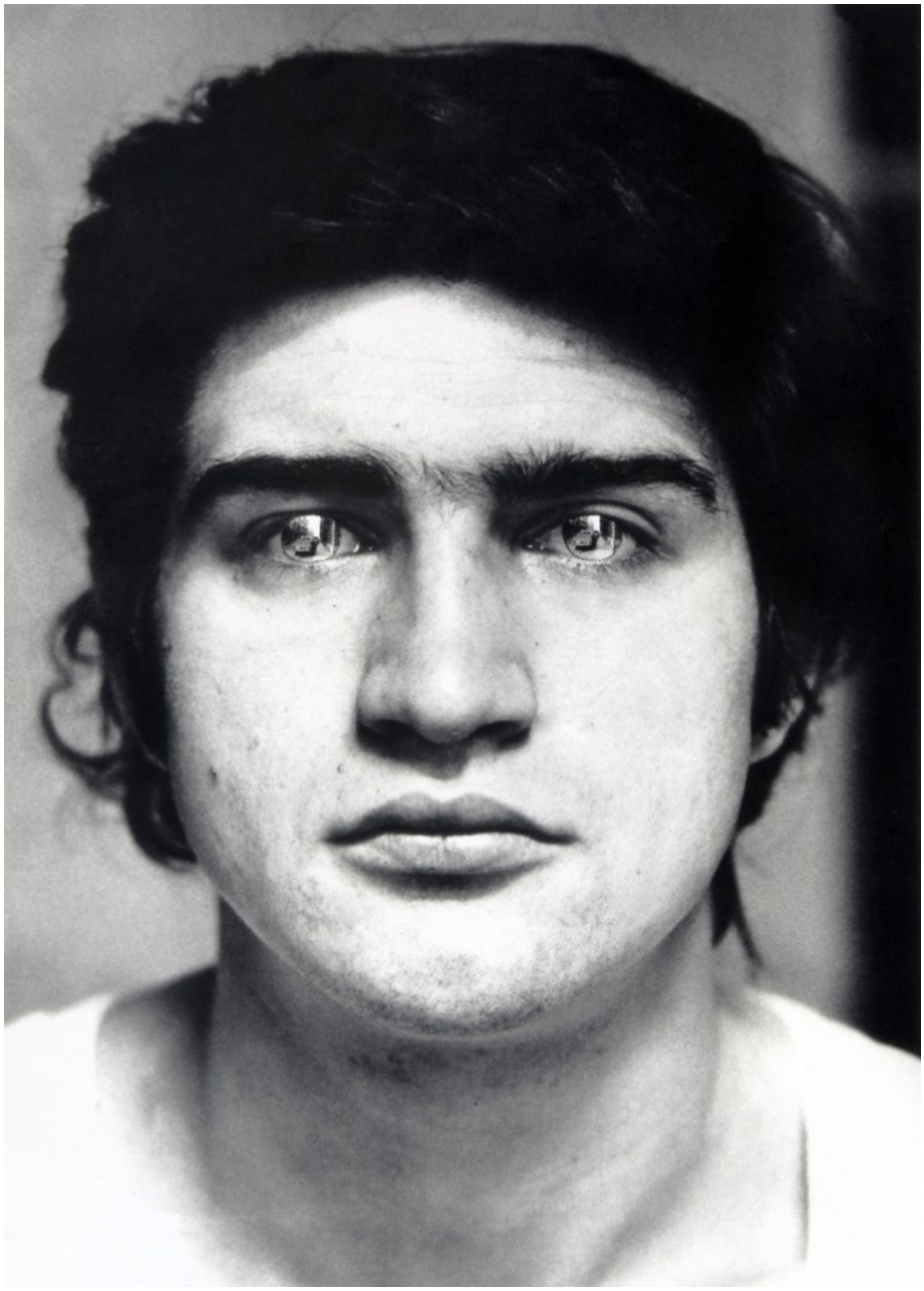
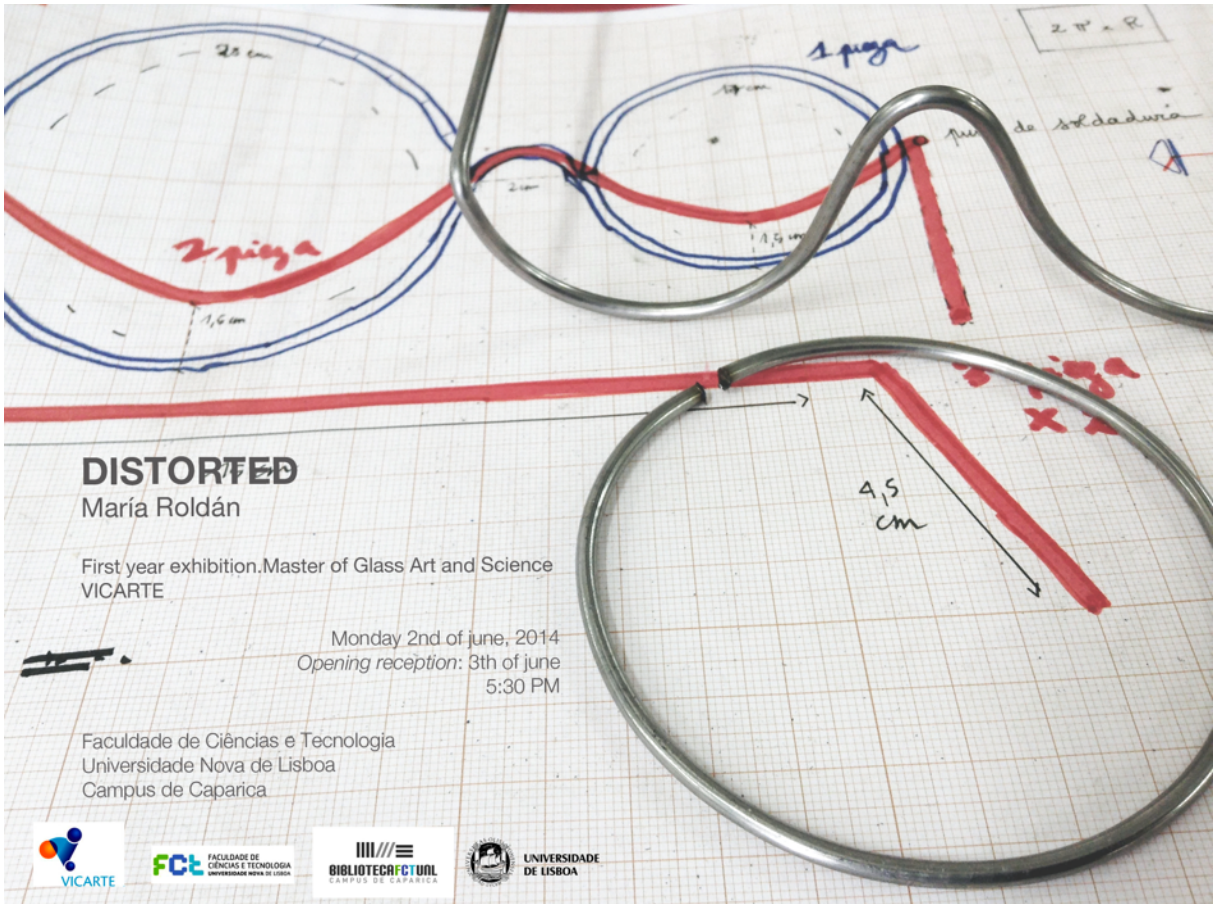


Image 21: (Image Annex): *Rovesciare I propri occhi,* Giusseppe Penone



(*Distorted* y *Desfocado*):



desfocado

maría roldán

Museu Nacional de História Natural e da Ciência/
Jardim Botânico de Lisboa /

Abertura: 02 de junho de 2015. 18:00 /
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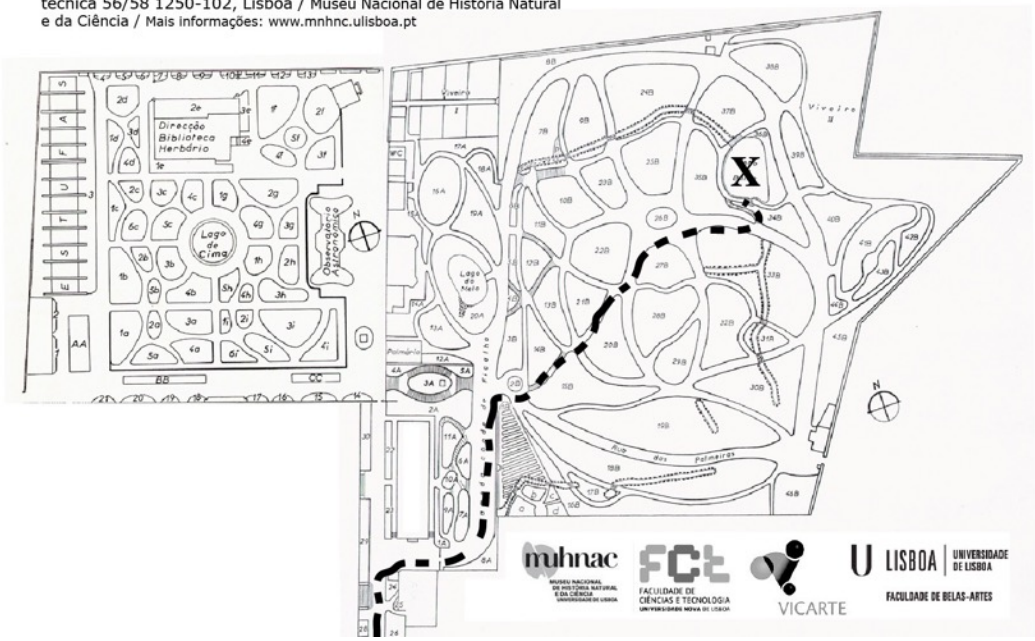
Desfocado **/ Exposição: María Roldán** / Apresentação de tese / Mestrado em Arte e Ciência do Vidro / Vicarte / Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa /Faculdade de Belas Artes da Universidade de Lisboa

Abertura: 02 de junho de 2015. 18:00 / Exposição: 03 Junho - 03 de julho de 2015 / Localização: Lago de Baixo, Jardim Botânico de Lisboa / Rua da Escola Politécnica 56/58 1250-102, Lisboa / Museu Nacional de História Natural e da Ciência / Mais informações: www.mnhnc.ulisboa.pt



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